City of Seattle

Gregory J. Nickels, Mayor
Department of Design, Construction and Land Use
D. M. Sugimura, Acting Director

CITY OF SEATTLE
ANALYSIS AND DECISION OF THE DIRECTOR
OF THE DEPARTMENT OF DESIGN, CONSTRUCTION AND LAND USE

Application Number:	2200256
Applicant Name:	Waldron Akira Architects for the Seattle School District
Address of Proposal:	10750 30th Avenue NE

SUMMARY OF PROPOSED ACTION

Master Use Permit for installation of 12 light poles (ten at 82 feet and two at 95 feet in height) around the existing athletic fields of Nathan Hale High School.

The following approval is required:

Special Exception - To allow light standards for public school athletic fields to exceed the zone height limit – (Seattle Municipal Code (SMC) 23.44.017B).

SEPA DETERMINATION: [X] Exempt [ ] DNS [ ] MDNS [ ] EIS

[ ] DNS with conditions

[ ] DNS involving non-exempt grading or demolition or involving another agency with jurisdiction.

BACKGROUND DATA

Site Description

The proposal site is located on the eighteen-acre campus of Nathan Hale High School in the Lake City neighborhood of northeast Seattle. The campus of the high school is bordered on the west, north, and east by public rights-of-way ("ROWs") for 30th Avenue Northeast, Northeast 110th Street, and 35th Avenue Northeast, respectively. These ROWs are improved with a hard surface but at this location some lack a curb and gutter.

The topography of the proposal site is relatively flat with virtually no change in elevation. The southerly edge of the site is characterized by the presence of Thornton Creek. Thornton Creek is an environmentally critical riparian corridor as defined in Seattle Municipal Code Chapter 25.09 and is mapped as such by the Department of Design Construction and Land Use. Vegetation on-site consists primarily of lawn and turf grasses and mature maples planted on school property along street ROWs. Additionally, vegetation along the riparian corridor consists of mature evergreen and hardwood trees as well as some hydrophytic, facultative wetland species.

The proposal site is located in a single family (SF-7200) residential zone with a minimum lot size of seven thousand two hundred square feet. Development in the vicinity consists of single-family structures and existing public facilities. The Meadowbrook Community Center is located immediately south of the proposal site on the opposite side of Thornton Creek. Jane Addams School is located immediately north of the proposal site on the opposite side of Northeast 110th Street. The SF-7200 zone designation continues in all directions from the proposal site with the exception of a node at the intersection of Northeast 110th Street and 35th Avenue Northeast zoned for more intense uses. Specifically, lots occupying the north block face of Northeast 110th Street between 34th and 35th Avenue Northeast are located within a Neighborhood Commercial One (NC1-30) zone with a thirty-foot height limit. Similarly, lots containing approximately four hundred lineal feet of frontage south of the intersection of Northeast 110th Street on 35th Avenue Northeast are located in a Lowrise 1 (L-1) multifamily residential zone.

Project Description

The applicant proposes to install an array of 12 wooden light poles in order to add field lighting to an existing football/soccer field. The lighting system is designed to limit spill light and glare by raising the floodlight mounting heights from the code maximum 30 feet to a height of 95 feet. This would allow a more direct downlighting of the play surface with full cutoff light boxes and shielded conventional floodlights both with steeper floodlight aiming angles. Ten poles would be 82 feet in height and would be mounted with full cut-off fixtures. Two poles would be 95 feet in height to be located behind the existing grandstand as viewed from the field and would be mounted with shielded luminaries, including hoods and louvers.

This lighting would support evening sports play and would meet the Illuminating Engineering Society of North America's (IESNA) standards for Class 3/4 level of play football play and Class 4 baseball play. The system would potentially be in use year round with games scheduled until 10:00 by the Seattle School District (SSD) and as late as 11:00 by the Parks Department.

Public Comment

Many public comment letters were received during the public comment period, which ended on May 16th, 2002. Public comment was varied and fell into two camps; support for the field lighting, which would positively impact field availability for evening sports play and concern over light, glare, noise and traffic impacts that would result from the proposal.

Prior to application, the SSD sent out 3,796 mailers to properties within 1/8 of a mile of the project site providing notice of a public workshop. On June 7, 2001 the SSD held a public workshop that fulfilled a pre-application requirement of code section 23.44.017.B. At this workshop, the SSD displayed exhibits of the proposal, held a general discussion of the environmental impacts and answered questions from the public before accepting comment on the project. Several pages of public comment were accepted at that time. Many of these letters expressed concern over the impacts such as light, glare, noise, traffic and parking.

ADDITIONAL BACKGROUND INFORMATION

Field Improvements and SEPA

As part of the Buildings, Technology and Athletic fields levy passed by the voters in 1998, the SSD proposed athletic field upgrades to several fields including Nathan Hale High School. The impacts of the Nathan Hale proposal were disclosed and analyzed by the SSD in May of 2000. On May 19th, 2000, the SSD issued a Determination of Non-Significance for the proposal, which included light poles approximately 85 feet in height. However, the permit application for field improvements that was eventually issued by DCLU did not include the field lighting because the code at that time did not include allowances for light standards to exceed the height limit.

On Feb 20, 2001 Ordinance 120266 was adopted by the Seattle City Council that amended the Land Use Code to allow taller lighting standards for public school playfield lighting where the additional height was needed to improve safety for athletic participants and minimize impacts of light trespass and glare. It was anticipated at that time, that applications such as these would not always be part of a proposal subject to SEPA review. When proposals, such as this one are exempt from SEPA review the ordinance provided that:

> *The Director may permit the additional height as a special exception subject to Chapter 23.76, Procedures for Master Use Permits and Council Land Use Decisions.*

(1) When seeking a special exception for taller light standards, the applicant must submit an engineer's report demonstrating that the additional height contributes to a reduction in impacts from light and glare. When the proposal will result in extending the lighted area's duration of use, the applicant must address and mitigate potential impacts. including but not limited to, increased duration of noise, traffic, and parking demand. The applicant also must demonstrate it has conducted a public workshop for residents within one-eighth (1/8) of a mile of the affected school in order to solicit comments and suggestions on design as well as potential impacts.

(2) The Director may condition a special exception to address negative impacts from light and glare on surrounding areas, and conditions may also be imposed to address other impacts associated with increased field use due to the addition of lights, including, but not limited to, increased noise, traffic, and parking demand.

Joint Use with Parks

The SSD and the City's Parks and Recreation Department have committed to enter into a joint operating agreement concerning the operation of the sports fields at Meadowbrook, Nathan Hale and Jane Addams. The specific terms and conditions of that agreement are not yet finalized. However, the SSD and the Parks Department anticipate that the renovated fields would be available to the public when school teams and public recreational events are not scheduled at the facility. The SSD would schedule use of the field for sporting events such as football, soccer and baseball games and practice. The Seattle Parks Department could schedule recreational play at the fields on other evenings throughout the year.

Although the fields could be used by the general public on a drop in basis, it is anticipated that between Parks and the SSD, fields would likely be scheduled on a consistent basis.

Lighting Terms and Technology

In DCLU's review of similar projects, questions and concerns have been raised regarding lighting impacts and the standards for measuring such impacts. The areas of concern are, generally, light trespass and glare.

Light trespass is the measurable amount of visible light that leaves the lighted area, in this case, the ball fields. This impact is typically a number expressed as a measurement of foot-candles. This can be measured horizontally, as in the number of foot-candles on the ground illuminating the ground outside of the project site. This can also be described in vertical foot-candles by describing the amount of illumination delivered outside the project area from the perspective of a viewer. Both of these measurements can be modeled on by computer software or taken physically with a light meter laid on the ground or pointed towards the play surface perpendicular to the ground, usually at a height of five feet.

For this project, light trespass has been calculated using the second method, which models the amount of light escaping the fields at the adjacent residential property lines; this is expressed in vertical foot-candles, 5 feet above the ground to simulate the experience of a viewer. These

calculations do not attempt to capture the amount of existing background light that may be expected in an urban residential environment nor do these predictions account for existing mitigation such as view obscuring shrubs and trees. Rather, this method produces a reasonable disclosure of the relative impact of light trespass from ball field lighting to allow an analysis of the proposal's impacts.

Glare is what the human eye experiences when viewing a bright light source against a dark backdrop. Glare impacts are somewhat subjective but are often experienced more acutely than impacts from light trespass. In severe instances, such as the lights of oncoming traffic, glare can cause disorientation and discomfort in the viewer. There are no engineering models that can fully quantify the experience of glare but typically, the most effective way to control glare is to provide shielding of the glare source; in the case of field lighting, minimizing direct view of the lamps.

Lighting manufacturers have created technologies to address impacts of light trespass and glare. Generally, there are two types of lighting systems that attempt to control light trespass and glare. The term *"full-cutoff"* generally refers to a specific type of lighting system composed of a lamp contained within a box-like housing. This housing almost fully shields direct view of the lamp from off the field and delivers light only below the horizontal plane of the fixture. A properly designed full cutoff system is well suited to reducing glare impacts but may require a greater number of poles than for other lighting systems to achieve the desired on-field light levels.

A "*shielded aimable"* system employs conventional floodlights with hoods and louvers to direct light onto the field and reduce direct view the lamps. This type of system generally uses fewer poles and does an excellent job of controlling light trespass. Shielded aimable systems were recently approved for use at Lower Woodland Park, Rainier Beach High School and have been installed at the University of Washington soccer facility. Both systems are effective at controlling light trespass and glare; in some instances, given the proximity of residential properties, a shielded aimable system may be proposed over a full cutoff system in order to more fully reduce light trespass.

Both of these lighting systems rely on higher lamp mounting heights to direct light down onto playing surfaces.

ANALYSIS—LAND USE DECISION

The Seattle Land Use Code sets a base height limit for structures in Single Family zones at 30 feet (SMC 23.44.012). Section 23.4.017.B.6 of the Land Use Code, allows additional height for athletic field lighting at public school sites, up to a maximum height of one-hundred (100) feet, where the additional height is determined by the Director to be necessary to ensure adequate illumination and where the Director determines that impacts from light trespass and glare are minimized to the greatest extent practicable. This section also provides that when the proposal will result in extending the lighted area's duration of use, the Director may impose conditions to mitigate additional potential impacts; including but not limited to, increased duration of noise,

traffic, and parking demand. The following is an analysis of the project relative to those considerations.

Light Trespass

The SSD has included an engineer's report prepared by Sparling Engineers that shows the additional mounting height for the proposed floodlights will allow lights to focus more directly downward, thus, containing more of the light on the field. The football field would be lit to an average maintained level of 30 foot-candles throughout. The football/soccer field would be lit to 30 foot-candles on the play surface. These levels are the minimum safe lighting levels for Class 3/4 level of football play recommended by IESNA. The proposed lighting systems would consist of wooden poles, ranging between 82 and 95 feet in height. All but two of the poles would support arrays of 1000-watt metal halide full cutoff luminaries. Located behind the grandstands, the two southernmost of the proposed poles would support arrays of shielded aimable 1000-watt metal halide floodlights with integral reflectors and shielding. The shielding would extend a minimum of 10 inches from the top of the reflector housing wrapping below the bottom hemisphere of the lamp around the sides of the reflector.

For the shielded conventional flood lights on two towers south of the grand stand, the engineer's report analyzed the difference between a code complying 30-foot flood light mounting height and the proposed mounting heights, at 82 to 95 feet. Mounted at a height of 30 feet, the floodlight arrays would have aiming angles of 8.5 degrees and 13 degrees below the horizontal plane of the floodlights. An increased mounting height of the floodlight would provide for aiming angles of 25 degrees and 36 degrees below the horizontal plane of the floodlights. These increased aiming angles target the light more directly on the play surface thus reducing the amount of light escaping the field. Careful location of the full cutoff floodlights limits direct light delivery beyond the playing surface.

Plans prepared by the lighting engineer that were submitted on March 1, 2001 depict predicted light trespass readings on a matrix corresponding to distances away from the light sources. The predicted vertical light trespass was calculated along NE 110th Street and along 35th Avenue adjacent to the football field. A similar lighting system mounted at 30 feet would result in as much as 10.5 foot-candles of light trespass measured vertically at the adjacent residential property line compared to the proposed system which would result in maximum of .5 foot-candles in the same location. Along most adjacent residential property lines, the higher mounting heights reduce light trespass to below .5 foot-candles compared to a 30 foot mounting heights, which would result in light trespass of as much as 7.8 foot-candles.

Raising the pole heights allows the use of full cutoff light boxes with markedly reduces light trespass and, in the case of the two poles south of the grandstand allows the use of shielding to control such impacts.

A recent study conducted by the Seattle Parks Department noted a tendency of wooden poles to twist over time, especially as they dry out during the initial period after installation, resulting in unintended floodlight aiming angles. Therefore, this project will be conditioned to institute an Athletic Field Illumination Management Plan that provides for periodic inspection of the fixtures

and acquisition of light trespass readings to ensure that the engineer's estimates are not exceeded over time. In addition to this Plan for long-term maintenance of aiming angles will be a requirement that the light fixtures be physically re-aimed at least once during the first year after installation.

The system allows remote programmable controlling of the lights for scheduled athletic events. However, events may end early or be cancelled. Provision should be made for an onsite manual override to shut the lights off when not in active use. Players and coaches leaving the field early should have access to a manual shutoff to ensure no unnecessary light trespass occurs. Provision of a manual override accessible to the participants will also be required as a component of the Athletic Field Illumination Management Plan.

Glare

Properties in the vicinity will experience some glare impacts. As noted in the foregoing discussion of lighting terminology, glare is the experience of viewing a bright light source against a dark backdrop; there are no engineering models to fully quantify the experience of glare. The amount of glare present correlates directly to how much of the lamp and its reflectors can be observed. Shielding the lamps from view is one of the best ways to mitigate glare.

Increasing the height of would seem to increase the ability of persons to have a direct view of the light source or reflectors. In an apparent paradox, raising the height of the lights reduces the amount of glare impact on surrounding properties by allowing the use of full cut off box lights (which due to the enclosure of the lamp and reflector, offer excellent glare mitigation) and extensive shielding of conventional lights. The engineer's report notes that locating the fixtures higher than the 30 foot limit allows the use of fewer poles, greater effectiveness of the internal shielding and reduced offsite glare.

Noise

The football stadium is equipped with a public address (PA) speaker system which will be used six to ten times per year for football games. The Parks Department may also use the PA system for weekend tournament play. Because the field lighting will allow increased hours of field use throughout the year, increased un-amplified noise, including cheering, whistles and voices from participants and spectators would occur during the extended hours. There is a possibility that between scheduled SSD events and Parks Department events, play could extend into the evening until 11:00 PM each night with spectators leaving the field shortly thereafter.

The Seattle Noise Ordinance regulates "unreasonable noises", including un-amplified human voices between the hours of 10:00 p.m. and 7:00 a.m. (SMC 25.08.500). However, DCLU's experience has been that noise impacts from boisterous sports play are rare and that a larger noise concern is one of car doors closings and engines idling as participants leave the field.

Off street parking areas exist at Nathan Hale High School, the Meadowbrook Community Center and at Jane Addams School. On some occasions these lots will be sufficient to accommodate most of the generated parking demand in the area. On other occasions, when events are

scheduled in one or more of these facilities, on-street parking spaces in the vicinity would be expected to be used for the vehicles of persons using lighted athletic fields.

The voices of persons conversing along residential streets, of car doors closing and of auto engines starting and running are likely to be audible within residences adjacent to streets where these activities are taking place. While audible and not desirable, noise related to pedestrians and automobiles is an expected occurrence on urban residential streets in Seattle. Such noise does not present an unexpected occurrence or one with impacts substantially exceeding those anticipated in such areas. Nor, is it reasonable to expect that persons using public recreational facilities such as the play fields at Nathan Hale High School would not park on nearby residential streets.

Crowd noise generated by hundreds of spectators at athletic activities could become unduly disruptive to nearby residents if events expected to draw large crowds were to be scheduled late into evening hours; especially so on Sunday through Thursday evening hours. Similarly disruptive could be the use of amplification systems during these hours. Event scheduling and rules of use under the lights at Nathan Hale High School will be controlled by the Seattle School District for school-related events and games. Otherwise use of the fields will be controlled and scheduled by the Seattle Department of Parks and Recreation, which are less likely to have large crowds of spectators. Policy and rules related to scheduling activities on athletic fields are created and implemented by executive officers under the direction of publicly elected officials of both the School District and the City. Integral to the mission of both these branches of government is the protection of the public health and safety. Given the specific attention and flexibility the Seattle Parks Department and the Seattle School District can provide to direct and monitor the use of this lighted field during evening hours, it is considered unnecessary and countervailing to the public interest to impose fixed conditions on such use.

For the reasons stated above, conditioning of noise impacts is deemed unwarranted.

Traffic

In August of 2001 a memorandum was prepared by Heffron Transportation, Inc., at the behest of SSD, which reviewed the traffic and parking information in the environmental documents prepared for the athletic field renovations of both Nathan Hale High School and Jane Addams School (which were prepared in 1999 and included impacts of field lighting) and updated that information. This Memorandum, dated August 10, 2001 is a part of the project file for this application and is relied upon here.

SEPA analysis of the expansion and renovation of the Nathan Hale Field indicated that no adverse traffic impacts needing mitigation would be created. The addition of field lighting will extend the hours of field operation further into the evening, beyond the peak traffic periods on surrounding streets. For this reason, it is considered unnecessary to impose conditions to mitigate the traffic impact of the addition of field lighting to the existing field.

Parking

The August of 2001 a memorandum prepared by Heffron Transportation, Inc. also addresses and updates parking demand and supply information related to both the Nathan Hale and the Jane Addams field lighting proposal together. Most events at the two fields are expected to attract small numbers of people, consisting of approximately 30 participants and spectators at each venue. Three Nathan Hale varsity football games were surveyed during the 2000 season. The average attendance was 467 persons with a peak game attendance of 651 persons. It is determined in the memo that there could be a football game attendance as large as 971 spectators. Using what the authors believe is a conservative estimate of 3.0 spectators per parked vehicle at the event yields a peak parking demand of 324 vehicles.

Nathan Hale High School has 260 on-site parking spaces. The Heffron Transportation, Inc. on-street parking utilization portion of its report determined that there are approximately 159 available on-street parking spaces within 400 feet of the athletic fields on an average weekday evening. The total amount of available parking for an evening event is then projected to be 419 spaces. At parking rate of three spectators per parked vehicle, parking is projected to be available for approximately 1,257 spectators.

Because there are multiple public facilities in the same general location which can and do draw evening attendees, the parking situation is more complex than that outlined above. Contiguous to the Nathan Hale field is an unlighted Parks Department field and a Parks Department Community Center with rooms which can be used for large meeting or receptions. Across N.E. 110th St. is the Jane Addams Middle School with its own lighted play field and an approximately 1,100 seat theatre. Under way is a project to add a 400 seat performance space at Nathan Hale, in addition to the 100 seat auditorium space already existing at the school. A limited amount of parking is available at the Jane Addams School and at the Community Center.

This combined capacity of these facilities in immediate proximity to one another could, if scheduled concurrently, greatly exceed the combined parking capacity of both the on-site parking lots and of the streets. In the MUP decisions for expansion and rehabilitation of the play fields at both schools, the attendance figure of 1,000 persons was arrived at as the parking saturation point. A condition of those MUP decisions was that an interagency agreement be reached whereby scheduling of events is conducted in such a way that the combined attendances at all the venues not exceed a predicted 1,000 attendees at any one point in time. The number 1,000 would appear to be, when compared to the information presented in the Hefron Memo noted above, a number reasonably likely to keep area-wide parking impacts at an acceptable level.

This proposal will, therefore, be conditioned to require the Seattle Department of Parks and Recreation and the Seattle School District to implement and use a scheduling system to insure the projected, combined, simultaneous attendance for events on the play fields at Nathan Hale High School and Jane Addams School, in the Meadowbrook Community Center, in the Jane Addams Auditorium, and in all auditoriums at Nathan Hale does not exceed 1,000 persons for any period of time outside scheduled school hours.

In order for the this parking plan to work it will also be necessary for the Seattle School District to maintain on-site parking lots and ensure those lots are open and available for use during all athletic activities.

It has been noted in application materials provided by the School District that the creation of signage to direct athletic field users to existing off-street parking facilities and of lighting sufficient to establish a sense of security for pedestrians between these parking areas and the fields would likely combine to increase usage of the parking areas and decrease the amount of on-street parking in residential areas. The project will therefore be conditioned to provide these two amenities.

Conclusion

Based on the foregoing analysis, the Director finds that the additional pole height contributes to a reduction in impacts from light and glare. Impacts from the extended hours of operation have been addressed and appropriately conditioned as outlined below. This proposal, as conditioned, meets the letter and intent the Special Exception criteria of 23.45.112A6.

DECISION – SPECIAL EXCEPTION

The project to install field lighting over the 30 foot height limit at Nathan Hale High School, depicted in Master Use Permit drawings for this application is **CONDITIONALLY GRANTED.**

CONDITIONS

Prior to Building Permit issuance

The Seattle School District will submit an Athletic Field Illumination Management plan to DCLU for approval. This plan will outline how the Seattle School District will institute the following conditions of approval.

1) In addition to the automated lighting controls, site controls will include a manual shutoff for events that end early or are cancelled.

2) The Seattle School District will maintain on-site parking lots and ensure those lots are open and available for use during all athletic activities.

3) Signage to direct athletic field users to existing off-street parking facilities and of lighting sufficient to establish a sense of security for pedestrians between these parking areas and the fields shall be installed and maintained.

4) The Seattle Department of Parks and Recreation and the Seattle School District shall implement and use a scheduling system to ensure the projected, combined attendance for

events on the play fields at Nathan Hale High School and Jane Addams Middle School, in the Meadowbrook Community Center, in the Jane Addams Auditorium, and in all auditoriums at Nathan Hale does not exceed 1,000 persons for any period of time outside scheduled school hours.

5) Provide for periodic inspection of the fixtures and acquisition of light trespass readings to ensure that the engineer's estimates are not exceeded over time. In addition to this Plan for long-term maintenance of aiming angles will be a requirement that the light fixtures be physically re-aimed at least once during the first year after installation and subsequently as necessary.

For the Life of the Project

Perform conditions outlined in the Athletic Field Illumination Management Plan.

Signature: (signature on file) Date: February 24, 2003
Scott Kemp, Senior Land Use Planner
Department Of Design, Construction and Land Use
Land Use Services

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